IN THE CLAIMS:

Claims 1-10 (Cancelled)

11. (New) Process for the recovery of chemicals and energy from spent liquor obtained in a chemical pulping process comprising:

gasifying the spent liquor under sub-stoichiometric conditions to produce partly at least one phase of solid and/or fused material and partly at least one phase of a flammable gaseous material;

cooling the phases by direct contact with a cooling medium; and

separating the phase of solid and/or fused material from the phase of flammable gaseous material such that the solid and/or fused material is dissolved and collected as a product liquid in a product liquid receiver, wherein the cooling medium consists of an essentially water-free cooling medium, which cooling medium is at least partly vaporized or cracked, whereby the vaporized/cracked cooling medium is drawn off together with the phase of flammable gaseous material, and the cooling medium after vaporizing/cracking increases the calorific value of the flammable gaseous material relative to the calorific value of the flammable gaseous material without addition of the essentially water-free cooling medium.

12. (New) Process according to claim 1, wherein the cooling medium consists essentially of a liquified gas.

13. (New) Process according to claim 1, wherein the cooling medium consists essentially of at least one selected from the group consisting of nitrogen, methane, propane and other hydrocarbons which are gaseous at NTP.

14. (New) Process according to claim 1, wherein the cooling medium consists essentially of an organic liquid.

15. (New) Process according to claim 1, wherein the cooling medium consists essentially of at least one selected from the group consisting of turpentine, tall oil, methanol and other alcohols which are liquids at NTP.

16. (New) Process according to claim 1, wherein the cooling medium is recovered in the chemical pulping process or in a process for recovery of chemicals and energy from the spent liquor.

17. (New) Process according to claim 1, wherein contact between the flammable gaseous material and the product liquid is avoided.

18. (New) Process according to claim 1, wherein the cooling medium is sprayed into the mixture of solid and/or fused material and flammable gaseous material produced by the gasification

19. (New) Process according to claim 1, wherein the cooling medium is sprayed into the mixture of solid and/or fused material and flammable gaseous material

produced by the gasification in connection with the separation of the two phases from each other.

20. (New) Process according to claim 1, wherein the cooling with the water-free cooling medium is carried out as a first stage in connection with the separation of the material phases produced by gasification from each other, whereafter further cooling is carried out in a second stage with a second cooling medium consisting essentially of water.

21. (New) Process according to claim 1, further comprising maintaining an essentially even temperature in the reaction vessel corresponding to the gasification temperature, wherein the separation in the separation section forms a part of the total reaction vessel.

22. (New) Process according to claim 21, further comprising adding an inert gas immediately above a product liquid receiver surface to form a protecting blanket over the product liquid receiver to prevent carbonation of boiling and splashing green liquor from the product liquid receiver.

23. (New) Process according to claim 22, further comprising cooling by means of the product liquid.

24. (New) Process according to claim 22, further comprising cooling by means of the product liquid in the form of a liquid film on a wall arranged directly before the solid/fused material reaches the product liquid receiver.